REMARKS

Dictionary definitions are provided in Appendix A-1.

I. - III. 35 U.S.C. § 112.

As recited in claims 4 - 9, the term error correction coding, or ECC, reasonably apprises a person of ordinary skill in the art that the claimed system can detect, and when necessary, correct errors without requiring user intervention. The written description explains that error correction coding is performed when reading and processing the ECC, when reading data. *See App.*, pg. 1, lines 19 - 23 and pg. 10, lines 11 - 15. Data is read and ECC processed "on the fly" without user intervention. By its plain and ordinary meaning, error correction coding occurs "on the fly," because user intervention is not required. [1]

Because the term "error correction coding" reasonably apprises a person of ordinary skill that errors can be corrected "on the fly," Applicants respectfully requests withdrawal of the rejection of claims 4 - 9. *See* MPEP 2106 (V)(A)(2) and MPEP 2111.01.

IV. Claim Objection.

The objection to claim 4 has been obviated by amendment.

V. - VI. 35 U.S.C. § 103.

The pending claims are directed to a storage device having a low-level error correction code unit ("low-level ECC unit") *within a drive* and a high-level error correction code unit ("high-level ECC unit") *within a host*. The error correction code units allow data that is being read to be checked for errors and, when necessary, corrected on the fly. The low-level ECC unit *within the drive* detects, and when necessary, corrects

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[1] The definition of "error correction coding" as excerpted from *The PC Guide* at http://www.pcguide.com/ref/ram/errECC-c.html (Attached in Appendix A-1).

errors in data written to a single sector,[2] which has a fixed size that is capable of holding 512 bytes of information. The high-level ECC unit *within the host* detects, and when necessary, corrects errors within data read from more than one sector of a disk.

The Hogan and Ando references describe a method and apparatus for performing data encryption and error code correction. The combined disclosure describes a host processor and storage device that can perform error correction. Hogan col. 4: 20-24 and col. 4: 66 - col. 7:4. The host processor can perform RS-PC correction on encrypted data blocks, having a length of 182 bytes, which is about 36% of the length of a single sector of a disk. Hogan col. 4: 22 - 25; col. 5:12 - 15; and Fig. 5; and *see* Appendix A-1 (explaining that a sector can hold 512 bytes). Neither Hogan nor Ando disclose a high-level ECC unit *in a host* that can correct errors and data across *multiple sectors*. Ando makes no references to a host and *Paper 6* makes clear that Hogan does not disclose the claimed ECC process within the host. *Paper 6, pg. 3.* Accordingly, Applicants respectfully request withdrawal of this rejection.

Furthermore, the combined disclosure suggests that error correction coding can be performed by an encoder and decoder within a storage device. Hogan col. 4:66 - 67; Ando col. 5: 32 - 39. Ando teaches that only a *portion of a sector*, or about 172 bytes can be encoded with a lateral ECC1 code and a row of data, or about 182 bytes, can be encoded with a longitudinal ECC2. Ando col. 5:33 - 34. When converted back to its original form by the decoder disclosed in Hogan, the decoder can "miscorrect (sic) data and, consequently, increase the number of error in the data block. Miscorrection (sic) further increases the likelihood of the block being uncorrectable." Hogan col. 4: 66 - 67 (explaining that a decoder performs the error correction) and Hogan col. 8: 27 - 34 (explaining the problems with such decoders).

Because the Hogan and Ando references do not disclose or suggest a high-level error correction code unit ("high-level ECC unit") *within a host* that detects, and when necessary, corrects errors within data read from *more than one sector* of a disk and a low-

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[2] A sector is a portion of a data storage area on a disk. Sectors are the smallest physical storage units on a disk and are of fixed size; typically, they are capable of holding 512 bytes of information. *Microsoft® Bookshelf® Computer and Internet Dictionary©* 1997 Microsoft Corporation attached within Appendix A-1; *also see Application,* page 9.

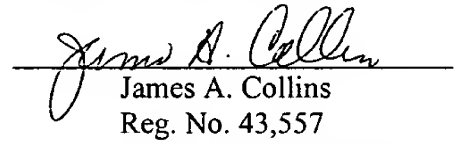
level error correction code unit ("low-level ECC unit") *within a drive* for performing error correction to *a single sector of a disk*, the combined reference does not render Applicants invention obvious. Accordingly, Applicants respectfully request withdrawal of this rejection.

Applicants also respectfully request an affidavit for the rejections supported by each Official Notice referred to in this action according to MPEP 707.05 at 700 - 88 and 37 CFR 104 (d)(2).

VII. Conclusion.

In view of the remarks and amendments above, Applicants respectfully submit that the claims are in condition for allowance. If any issues remain, Applicants request that the Examiner call the undersigned to expedite the prosecution of the application.

Respectfully submitted,

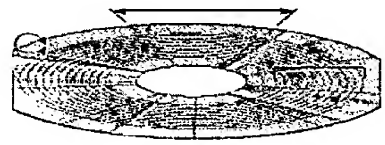


James A. Collins
Reg. No. 43,557
Attorney for Applicants

BRINKS HOFER GILSON & LIONE
P.O. BOX 10395
Chicago, IL 60610
(312) 321-4200

APPENDIX A-1

sector **sector** (sek'ter) *noun*
A portion of the data storage area on a disk. A disk is divided into sides (top and bottom), tracks (rings on each surface), and sectors (sections of each ring). Sectors are the smallest physical storage units on a disk and are of fixed size; typically, they are capable of holding 512 bytes of information apiece.[3]



Click image to enlarge

"Error Correction Coding" as excerpted from *The PC Guide*[4]:

"Called *ECC*, which stands for *error correcting circuits*, *error correcting code*, or *error correction code*, this protocol not only detects both single-bit and multi-bit errors, it will actually *correct* single-bit errors on the fly, transparently."

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[3] *Microsoft® Bookshelf® Computer and Internet Dictionary*© 1997 Microsoft Corporation. All rights reserved.

[4] http://www.pcguide.com/ref/ram/errECC-c.html.